

In the Claims

The claims are not being amended, but are reproduced for Examiner's convenience.

1. A system for identifying a selected user from a first plurality of users, the system comprising:

a first grammar extractor having a first input operatively coupled to receive an identifier of one of the plurality of users, and a second input operatively coupled to receive a first utterance from the one of the first plurality of users uttered during a first session, the first grammar extractor for extracting a first grammar from the first utterance received at the first grammar extractor first input and for providing at an output the first grammar and the corresponding identifier received at the first input;

a grammar storage having an input/output coupled to the first grammar extractor output, for receiving the first grammar and identifier for each of the plurality of users and storing the grammar responsive to the identifier, and for providing at the input/output one of said grammars corresponding to an identifier responsive to receipt of said identifier at the grammar storage input/output;

20 a second grammar extractor having an input operatively
coupled to receive a second utterance from the selected
user uttered during a second session different from the
first session, the second grammar extractor for extracting
and providing at an output a second grammar responsive to
25 the second utterance received at the second grammar
extractor input; and

a first recognizer having a first input coupled to the
grammar storage input/output, and a second input coupled to
the second grammar extractor output, the first recognizer
30 for identifying a match between a set of a plurality of the
first grammars stored in the grammar storage and the second
grammar received at the second first recognizer input, and
for providing at an output coupled to an apparatus output,
the identifier of the user corresponding to the grammar in
35 the grammar storage most closely matching the grammar
received at the first second input.

2. The system of claim 1, wherein the first utterance
comprises a password of the one of the plurality of users,
and the second utterance comprises a password of the user.

3. The system of claim 1, wherein the first grammar
extractor is the second grammar extractor.

4. The system of claim 1, additionally comprising:

A second recognizer having an input operatively coupled to receive a third utterance uttered during the second session, the second recognizer for, responsive to
5 the third utterance, identifying a second plurality of users from the first plurality of users as belonging in the set of users.

5. The system of claim 4, wherein the third utterance comprises a name of the user.

6. The system of claim 5, wherein the second recognizer identifies the second plurality of users responsive to the third utterance by recognizing the third utterance and comparing the recognized third utterance with
5 a list of user identifiers of the first plurality of users.

7. The system of claim 6, additionally comprising:

a first voiceprint extractor having a first input operatively coupled to receive an identifier of one of the first plurality of users and a second input operatively
5 coupled to receive a fourth utterance from the one of the first plurality of users uttered during the first session, the first voiceprint extractor for creating a voiceprint responsive to the fourth utterance and for providing the voiceprint and the identifier of the user at an output;

10 a voiceprint storage having an input/output coupled to
the first voiceprint extractor output, the voiceprint
storage for storing, for each of the first plurality of
users, the voiceprint received at the voiceprint storage
input/output associated with the identifier of the user,
15 and for providing a first voiceprint at the input/output
responsive to a request for the voiceprint comprising the
identifier of the user corresponding to the voiceprint
received at the voiceprint storage input/output;

a second voiceprint extractor having an input coupled
20 to receive a fifth utterance uttered by the selected user
during the second session, the second voiceprint extractor
for extracting and providing at an output a second
voiceprint responsive to the fifth utterance; and

a verifier having a input/output coupled to the
25 voiceprint storage input/output, a first input coupled to
the second voiceprint extractor output for receiving the
second voiceprint, and a second input coupled to the first
recognizer output, and an output coupled to the apparatus
output, the verifier for providing at the input/output an
30 identifier corresponding to the identifier received at the
second input and receiving at the input/output one of the
first voiceprints, said first voiceprint corresponding to

the identifier provided at the input/output, the verifier additionally for comparing the first voiceprint received at
35 the verifier input/output with the voiceprint received at the first verifier input and for signaling at an output coupled to the apparatus output responsive to said first voiceprint and said second voiceprint matching within an acceptable tolerance level.

8. The system of claim 7 wherein:

each fourth utterance comprises a sixth utterance uttered by one of the plurality of users during the first session and the first utterance; and

5 the fifth utterance comprises the second utterance and the third utterance.

9. The system of claim 8, wherein the sixth utterance comprises a name of one of the first plurality of users.

10. The system of claim 7 wherein the second voiceprint extractor is the first voiceprint extractor.

11. A method of identifying a caller as a user of a computer system, the method comprising:

receiving a first utterance;

extracting a grammar from the first utterance;

5 comparing the grammar extracted with a set of
grammars, each grammar in the set of grammars corresponding
to a user;

 responsive to the comparing the grammar step,
identifying a set of at least one user, the number of users
10 in set of at least one user smaller than the number of
users corresponding to the grammars in the set of grammars;
and

 extracting a voiceprint from the first utterance;
 comparing the voiceprint extracted with a voiceprint
15 for each user in the set of at least one user; and

 identifying the user responsive to the comparing the
voiceprint step.

12. The method of claim 11, wherein the number of
users in the set of at least one user is one.

13. The method of claim 11, additionally comprising:
receiving a second utterance from the caller;
recognizing the second utterance; and
identifying the set of grammars responsive to the
5 recognizing the second utterance step.

14. The method of claim 13, wherein the recognizing step comprises speaker independent voice recognition of the second utterance.

15. The method of claim 13, wherein the recognizing step comprises speaker dependent voice recognition of the second utterance.

16. The method of claim 13, wherein the extracting the voiceprint step comprises extracting the voiceprint from the first utterance and the second utterance.

17. A computer program product comprising a computer useable medium having computer readable program code embodied therein for identifying a caller as a user of a computer system, the computer program product comprising:

5 computer readable program code devices configured to cause a computer to receive a first utterance;

computer readable program code devices configured to cause a computer to extract a grammar from the first utterance;

10 computer readable program code devices configured to cause a computer to compare the grammar extracted with a set of grammars, each grammar in the set of grammars corresponding to a user;

computer readable program code devices configured to
15 cause a computer to, responsive to the computer readable
program code devices configured to cause a computer to
compare the grammar, identify a set of at least one user,
the number of users in set of at least one user smaller
than the number of users corresponding to the grammars in
20 the set of grammars;

computer readable program code devices configured to
cause a computer to extract a voiceprint from the first
utterance;

computer readable program code devices configured to
25 cause a computer to compare the voiceprint extracted with a
voiceprint for each user in the set of at least one user;
and

computer readable program code devices configured to
cause a computer to identify the user responsive to the
30 comparing the voiceprint step.

18. The computer program product of claim 17, wherein
the number of users in the set of at least one user is one.

19. The computer program product of claim 17,
additionally comprising:

computer readable program code devices configured to
cause a computer to receive a second utterance from the
5 caller;

computer readable program code devices configured to
cause a computer to recognize the second utterance; and

computer readable program code devices configured to
cause a computer to identify the set of grammars responsive
10 to the recognizing the second utterance step.

20. The computer program product of claim 19, wherein
the computer readable program code devices configured to
cause a computer to recognize comprise computer readable
program code devices configured to cause a computer to
5 perform speaker independent voice recognition of the second
utterance.

21. The computer program product of claim 19, wherein
the computer readable program code devices configured to
cause a computer to recognize comprise computer readable
program code devices configured to cause a computer to
5 perform speaker dependent voice recognition of the second
utterance.

22. The computer program product of claim 19, wherein
the computer readable program code devices configured to
cause a computer to extract the voiceprint comprise

computer readable program code devices configured to cause
5 a computer to extract the voiceprint from the first
utterance and the second utterance.